Loggerhead Shrike

Lanius ludovicianus

Last updated: 2003

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GENERAL RANGE AND WASHINGTON DISTRIBUTION

Loggerhead shrikes are found in portions of British Columbia, Alberta and Saskatchewan, and throughout much of the United States (although rare in the northeastern U.S.) south to southern Mexico (Yosef 1996, Sibley 2000).

In Washington, the shrike is primarily a breeding resident of the shrub-steppe zone (see Figure 1; Miller 1931, Poole 1992). Shrikes depart for their migration south by September (Morrison 1981, Burnside 1987) and return around March (Poole 1992). Some individuals remain year-round in eastern Washington (Washington Department of Fish and Wildlife's Wildlife Information System, unpublished data).

Figure 1. General breeding range of the loggerhead shrike, *Lanius ludovicians*, in Washington. Map derived from Smith et al. 1997.

RATIONALE

The Loggerhead shrike is a State Candidate species that has shown decreases in population from historical densities and distribution (Morrison 1981, Fraser and Luukkonen 1986, Sauer et al. 1995, Cade and Woods 1997). A recent analysis of Breeding Bird Survey data for the Columbia River Basin shows a significant decline in the shrike population over the last 26 years (Saab and Rich 1997). Loss of shrub-steppe habitat partially explains local declines of this species (Cade and Woods 1997). The Interior Columbia River Basin Ecosystem Management Project has listed loggerhead shrike as a species of high management concern for the region (Saab and Rich 1997).

HABITAT REQUIREMENTS

Loggerhead shrikes use open habitat during both breeding and nonbreeding seasons. Grasslands or pastures with short or patchy grasses are usually used for foraging. Scattered trees, shrubs or hedgerows are most often used for nesting and perching (Kridelbaugh 1983, Bohall-Wood 1987, Gawlik and Bildstein 1990). In the shrub-steppe of eastern Washington, Poole (1992) found shrikes were most abundant in lowland communities of sagebrush (*Artemisia* spp.), Sandberg's bluegrass (*Poa sandbergii*), and cheatgrass (*Bromus tectorum*); mixed shrub communities containing big sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), Sandberg's bluegrass, Indian ricegrass (*Oryzopsis hymenoides*), and needle and thread grass (*Stipa comata*); and bitterbrush communities containing bitterbrush, Indian ricegrass, and needle and thread grass. Surveys in eastern Washington shrub-steppe revealed a greater abundance of loggerhead shrikes in deep, sand soil communities than in communities with loamy or shallow soils (Vander Haegen et al. 2000). The shrub-steppe communities occupied by shrikes could be described as a mixture of shrub patches and grassy or sandy openings (Poole 1992). Leu (1995) reported greater foraging success by juvenile shrikes in shrub-steppe stands having a more open grass/forb layers, where birds could readily spot and capture prey on the ground.

Trees or shrubs used for nesting share the common characteristics of having dense foliage (Poole 1992), being very bushy, and/or thorny (Kridelbaugh 1983, Brooks and Temple 1990a). Selection criteria for nesting trees or shrubs appear to be based on the amount of cover and protection the plant provides rather than a preference for a particular species of tree or shrub (Porter et al. 1975, Gawlik and Bildstein 1990). In eastern Washington, shrub species with the greatest number of nests were big sagebrush and bitterbrush, but nests also were found in mock orange (*Philadelphus lewisii*), greasewood (*Sarcobatus vermiculatus*) and clematis (*Clematis* spp.) (Miller 1931, Poole 1992). Shrikes in Idaho shrub-steppe nested in big sage (65.4%), bitterbrush (20.4%) and greasewood (12.3%), with shrubs used for nesting averaging 162 cm (64 in) in height (Woods and Cade 1996). Choice of nest shrub seemed unrelated to the success or failure of shrike nests in Idaho; other variables such as presence of foraging perches may have been more important in determining adequate shrike habitat (Woods and Cade 1996).

Loggerhead shrikes are highly territorial, maintaining larger territories than other insectivorous perching bird species of similar size (Yosef 1996). Mean territory size from 8 different studies ranged from 7.5 ha to 34 ha (18.5 - 84 ac) (Yosef 1996). Poole (1992) found that shrikes defended territories averaging 13.9 ± 2.0 ha (34.35 ± 4.9 ac) on the Hanford Site in Washington. The average distance a shrike nested to the closest adjacent nesting shrike was 610 m (2,000 ft) in shrub-steppe habitat in Washington (Poole 1992) and ranged from 115-670 m (377-2198 ft)in Idaho shrub-steppe (Woods 1995). In the upper Midwest, Brooks and Temple (1990a) observed shrikes hunting up to 400 m (1,312 ft) away from their nest site during nesting season.

Loggerhead shrikes are generalists, feeding on any animal they can subdue (Fraser and Luukkonen 1986, Gawlik and Bildstein 1990, Scott and Morrison 1990). Their diet consists of insects, small mammals, birds, reptiles and amphibians. On the Hanford Site, shrikes preferred grasshoppers, lizards and small mammals (Poole 1992). These prey items were more abundant in sagebrush and bitterbrush communities than in grassland and rabbitbrush (*Chrysothamnus* spp.) communities. Shrikes are the only perching birds that regularly kill and consume vertebrate prey by means of impaling (Fraser and Luukkonen 1986).

LIMITING FACTORS

Specific factors limiting loggerhead shrikes are unknown. Suggested causes of population decline include loss of breeding habitat (Kridelbaugh 1981, Burnside and Shepherd 1985, Tyler 1992), low overwinter survival through loss of wintering areas (Hass and Sloane 1989, Brooks and Temple 1990a,b), contamination by pesticides (Kridelbaugh 1981, Fraser and Luukkonen 1986) and high mortality due to vehicle collision (Gawlik and Bildstein 1990, Flickinger 1995).

MANAGEMENT RECOMMENDATIONS

Shrub-steppe communities should be left in reasonably undisturbed condition and fragmentation should be minimized (Woods and Cade 1996). Management activities that increase cheatgrass invasion or increase risk of wildfire also must be avoided (Leu and Manuwal 1996).

In shrub-steppe and associated riparian habitats, retain patches of tall shrubs for nesting and perching (Leu and Manual 1996). Herbaceous cover should average <20% and should be dominated by native species >30% of the ground should be bare (including areas of cryptogramic crust) (Altman and Holmes 2000). In agricultural areas, retain scattered trees, shrubs, hedgerows, as well as trees along fence lines for nesting and perching (Yosef 1996).

Removal of sagebrush should be considered only in rare instances when reducing shrub cover is necessary to meet ecological goals of habitat restoration. Sagebrush cover should be reduced on a site only after careful consideration of how the methods used may affect sagebrush regeneration and the opportunity for exotic vegetation to invade the site. Burning may create the greatest risk to local shrike populations because the damage is immediate and regeneration to pre-burn condition may take up to 30 years (Harniss and Murray 1973). Fire is not a suitable tool to reduce sagebrush cover in low rainfall zones because disturbance often leads to cheatgrass invasion and because sagebrush recovery is slow (e.g., Benton, Franklin and Grant Counties) (Wisdom et al. 2000). If chemical use is planned for areas where loggerhead shrikes occur, refer to Appendix A for a list of contacts to consult when using and assessing pesticides, herbicides and their alternatives.

Livestock grazing at low to moderate levels has not been shown to be detrimental to loggerhead shrike habitat (Saab et al. 1995); however, sustained grazing likely will reduce habitat suitability (Altman and Holmes 2000). In keeping with recommendations published for other shrub-steppe passerines (Altman and Holmes 2000), we recommend that grazing levels should be sufficiently low to allow >50% of the year's growth of perennial bunchgrass to persist through the following breeding season.

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KEY POINTS

Habitat Requirements

- Open habitats with short and/or patchy grasses for foraging and scattered trees, shrubs, or hedgerows for nesting and perching sites.
- The shrub-steppe communities occupied by shrikes could be described as a mixture of shrub patches and grassy or sandy openings.

Management Recommendations

- Retain shrub-steppe communities, especially big sagebrush and mixed shrub communities.
- Avoid wildfires and activities that may increase invasion by exotic vegetation.
- Retain patches of tall shrubs for nesting and perching in shrub-steppe and associated riparian habitats.
- Livestock grazing should be kept at low to moderate levels, with >50% of the year's growth of perennial bunchgrass persisting through the following breeding season.
- In agricultural areas (e.g., pastures), establish or retain scattered trees and tall shrubs, wind break, and hedgerow vegetation.
- Refer to Appendix A for a list of contacts to consult when using and assessing pesticides, herbicides and their alternatives if chemical use is planned for areas where this species occurs.